

ATARI ST / TT / Falcon 030

Your Atari's user-friendly GEM interface is, as you know, very sluggish. High quality graphic output also required an extra program called GDOS. That costs time and memory. NVDI puts an end to all that! It boosts the speed of your Atari enormously and also comes with a built-in GDOS.

- NVDI includes Speedo™ and True-Type® vector font scalers for real WYSIWYG.
- NVDI offers swift output of vector text and highly accelerated graphic functions.
- The package contains fast printer drivers, META.SYS, MEMORY.SYS and IMG drivers.
- NVDI supports all ATARI resolutions and incorporates special optimised routines for TT und Falcon 030.
- NVDI is perfectly adapted to the multitasking systems MagiC and MultiTOS.



2B

ATARI ST / TT / Falcon 030

NVDI

ET 4000 TC
Life® & Gothic 720™

2B

NVDI 3

NVDI 3

NVDI is a program by Behne & Behne Systemsoftware GbR, Germany. NVDI uses Bitstream® 4-in-1 processor technology, version 3.2. which allows NVDI to access Speedo™ and TrueType® vector fonts.

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Press:

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Introduction

NVDI is a replacement for the part of the operating system responsible for graphic output to the screen and printer. The routines are optimised so that output is accelerated considerably. Operation of your computer with NVDI and the accompanying tools is easier and more comfortable.

This new version of NVDI incorporates Speedo™ and TrueType® vector font scalers. NVDI together with the new printer and IMG drivers gives your Atari WYSIWYG at a remarkable speed and in high quality

System Requirements

NVDI will run with only 512kB memory. However, use of vector fonts requires that your system should have at least 1Mb memory and a hard disk.

NVDI is fully compatible with all Motorola 680xx processors because it contains no self-modifying code and the programmers have taken all relevant changes since the M68010 into account

Minimum space used on magnetic media: approx. 300 kb

Minimum use of volatile memory: approx. 200 kb

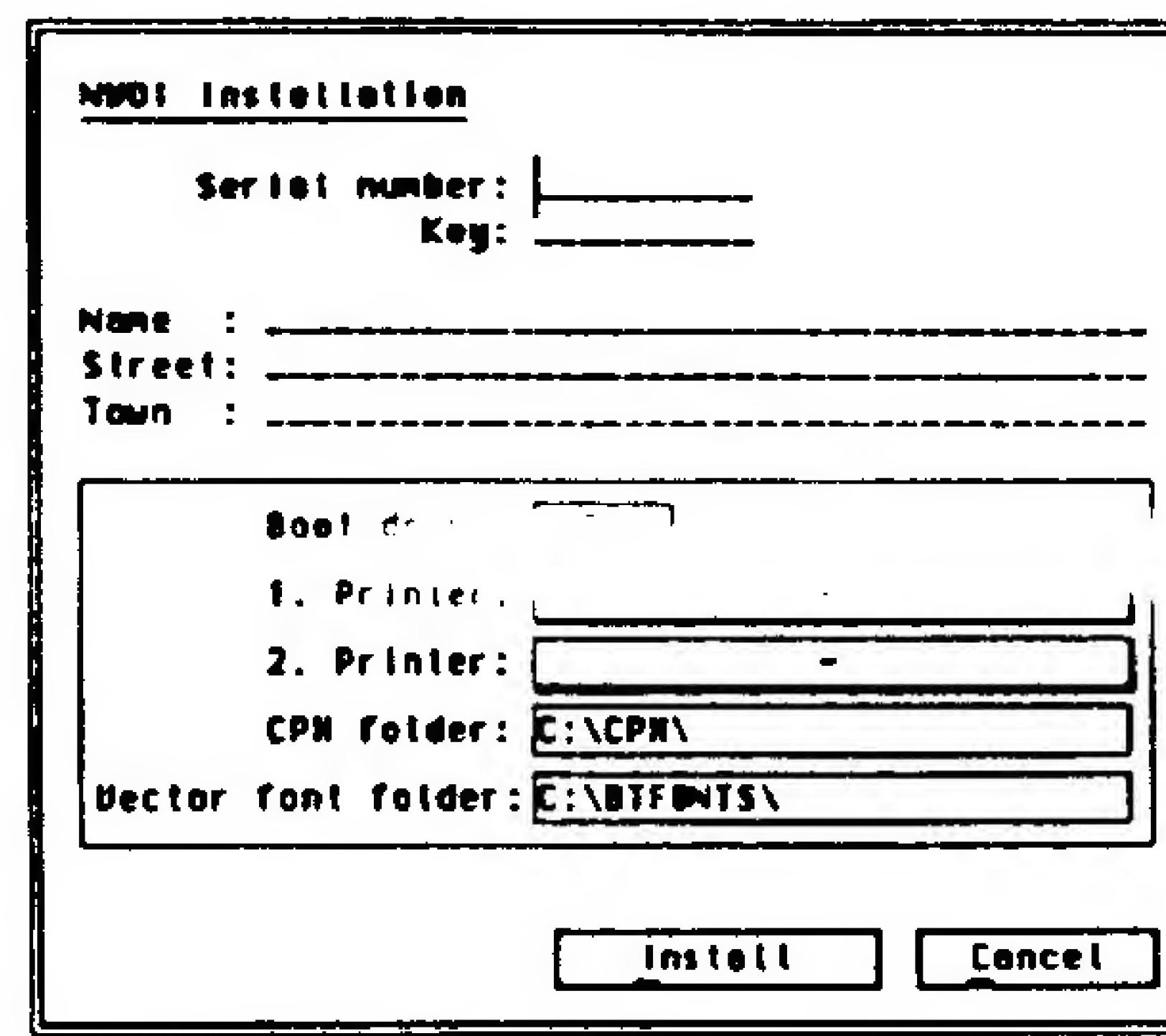
Maximum number of device drivers: 99

Maximum number of fonts: limited only by the available memory

Maximum number of handles: 128

Installation

The NVDI disk contains a program called **INSTALL.PRG** to automate installation. Start the program with a double-click. The following dialog box will appear:



Enter the 9-digit serial number and the key (as printed on the disk label). Take care to enter these correctly! Enter your name and address. Choose your boot drive (usually 'C' in the case of hard disks) and appropriate printer driver and then click on the **Install** button. NVDI is installed automatically, the device drivers are copied and an **ASSIGN.SYS** is created.

While NVDI is being installed you should use the time to fill out the registration form. Only registered NVDI users will be informed about newer developments and will be entitled to updates/upgrades.

The following dialog box will inform you if you have entered the wrong serial number or if any other entries are incomplete:



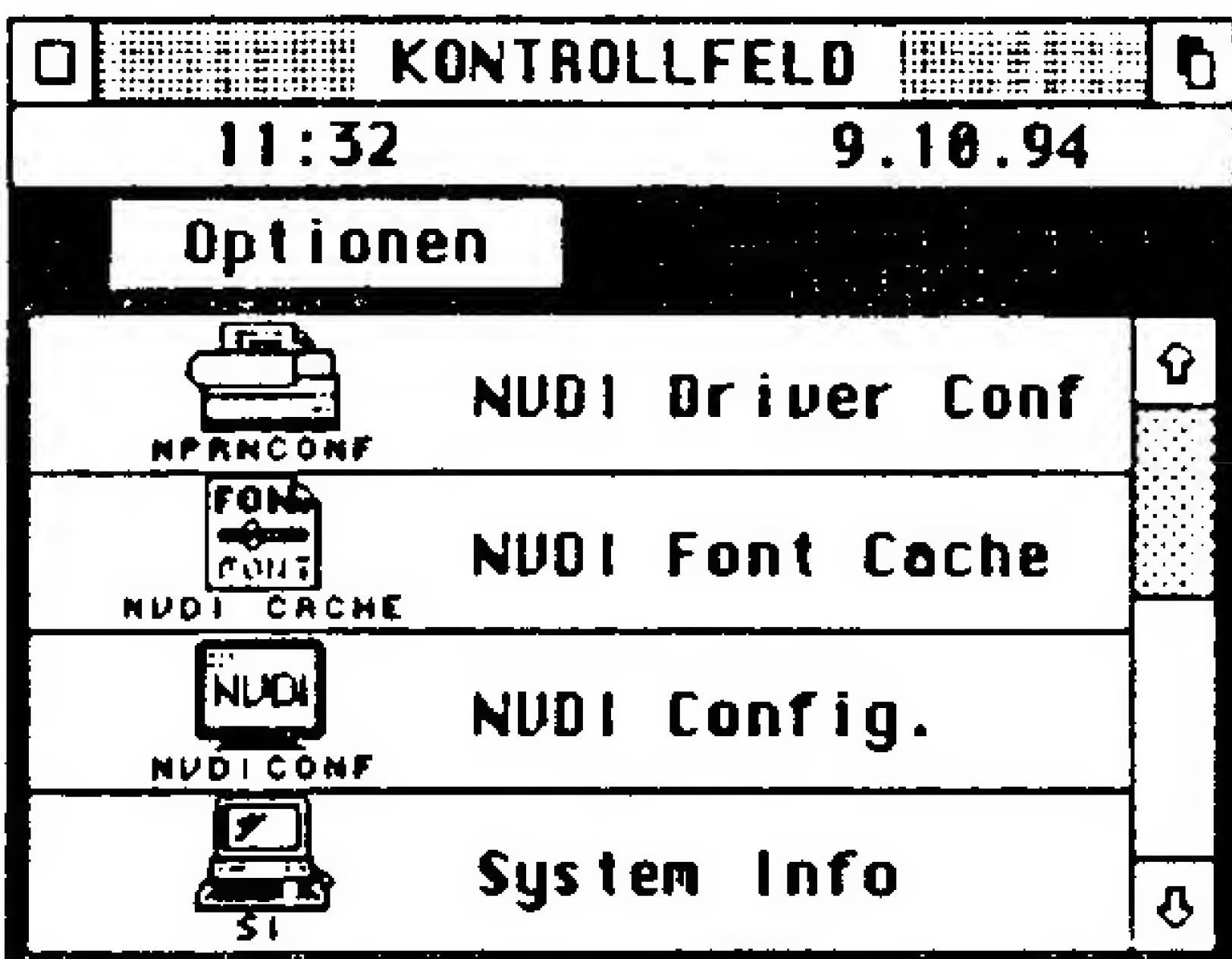
In such a case you will have to start the installation program again.

After you have installed NVDI it will only become active after the system is rebooted. Before pushing the reset button, make sure that NVDI's configuration is not going to be changed or destroyed by a boot selector (see "Configuration Tips"). NVDI will not be loaded if you hold down both Shift keys whilst booting the system.

You should also read the text file **README.1ST** which contains the latest information.

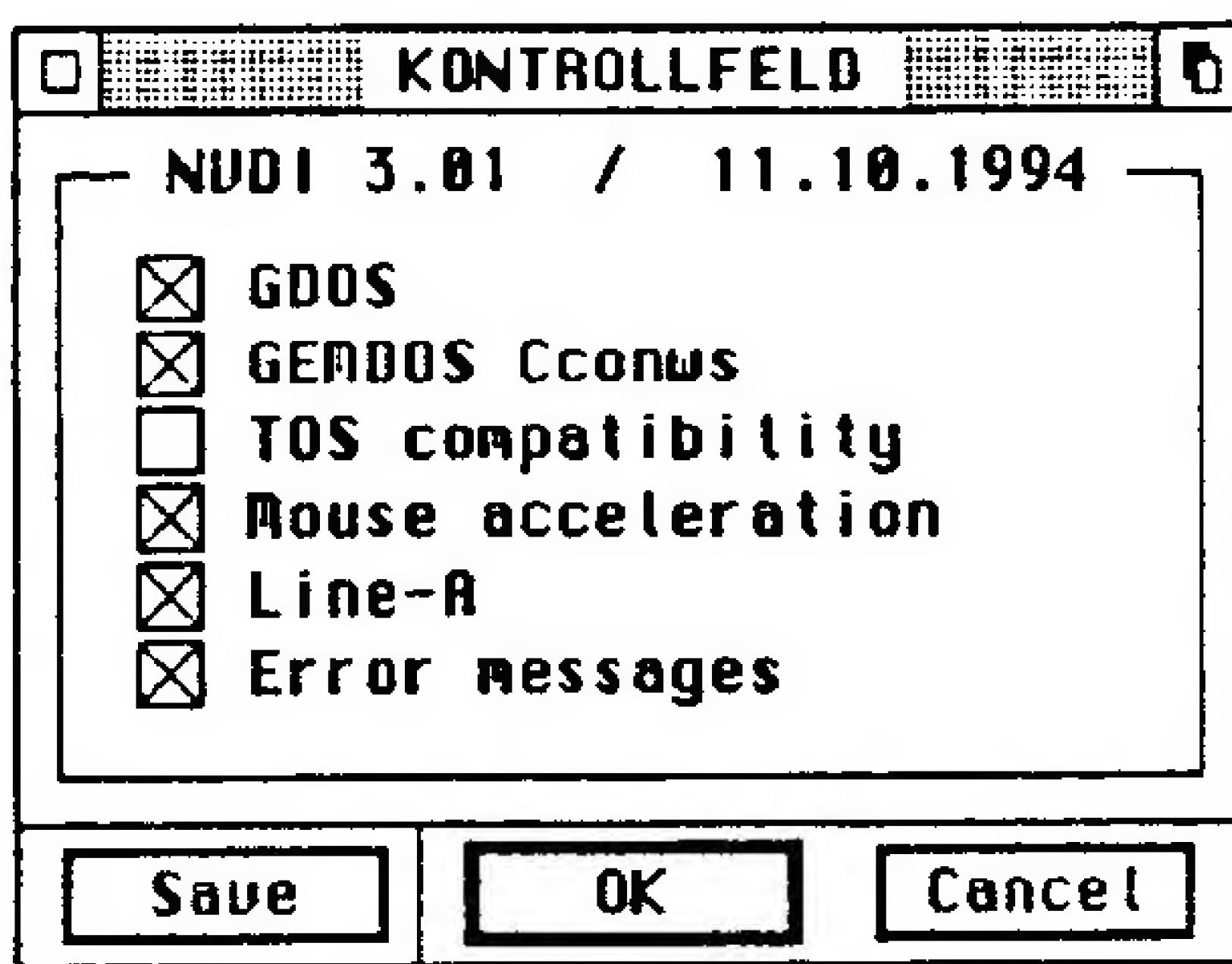
Configuring NVDI

NVDI has many options which can be set comfortably using the CPX modules.



NVDICONF-CPX

This module is used for setting NVDI parameters during operation. The following dialog box is opened when NVDICONF is called:



GDOS:

This switch is used for turning GDOS on or off. Turning GDOS off should only become necessary if you want to run an older program which doesn't work correctly together with GDOS. As a rule it should be left on as most of the newer programs require this part of the operating system.

GDOS will be activated automatically if you use screen drivers other than NVDI. All other switches will be disabled.

GEMDOS character output:

Text output via GEMDOS will be accelerated even more if this switch is on.

Error compatibility:

Switching this on will cause several faulty VDI calls and functions to be handled in a way which is compatible with the original Atari VDI. This requires that several security checks are skipped and reduces NVDI's capabilities. For this reason, it shouldn't be left on all the time.

Dynamic Mouse:

NVDI incorporates a dynamic mouse routine. This reacts linearly to slow mouse movements and non-linearly (i.e. the covered distance increases) to faster mouse movements. This dynamic behaviour is especially useful if you own a large monitor.

Line-A:

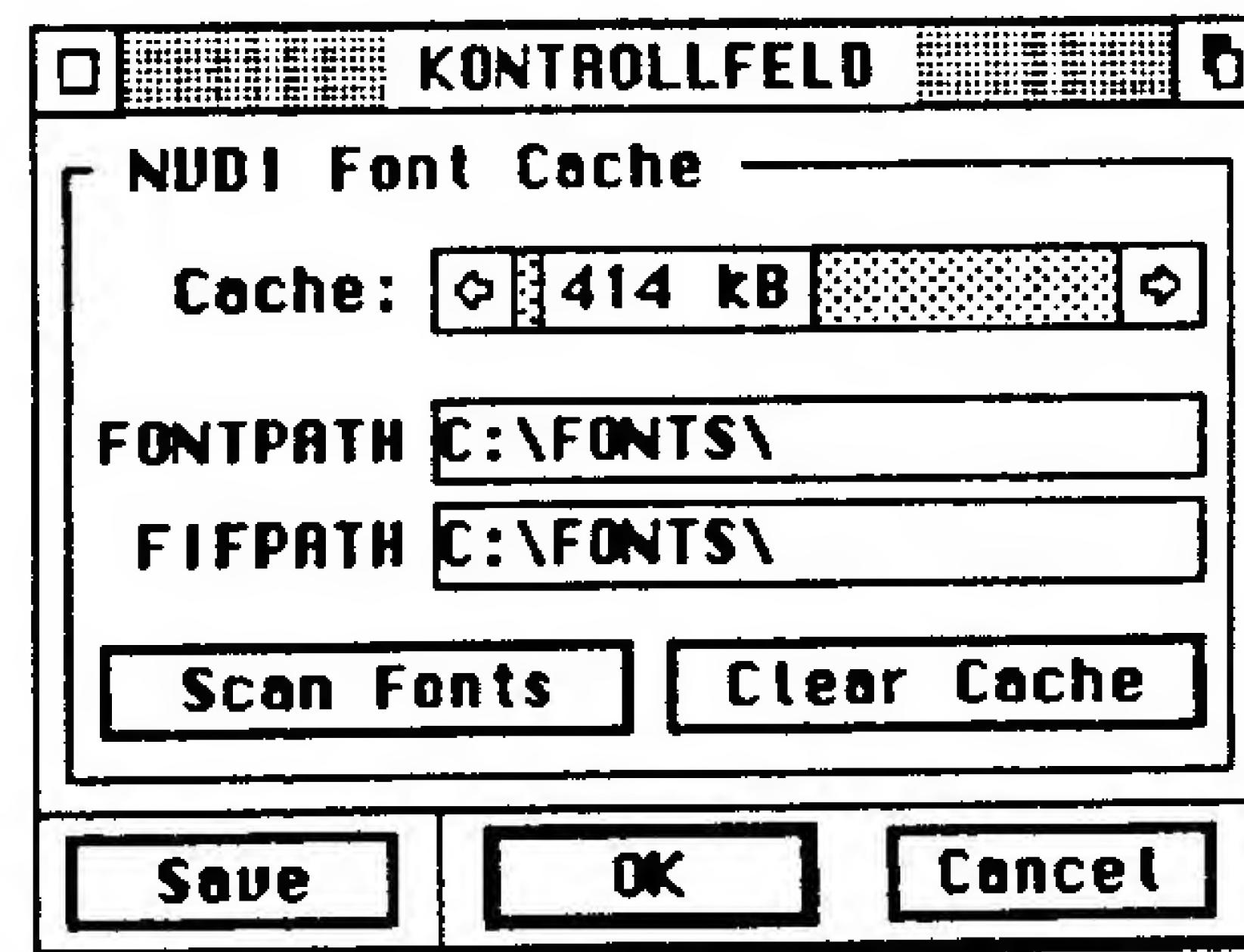
This switch has a special meaning: If a program runs fine without this switched on you can safely assume that the program doesn't make use of the so-called Line-A routines. Programs running on systems with large monitors and/or special graphics adapters should not use these routines. However, there are several useful programs for the Atari ST/TT which call Line-A functions, so you should leave this switch on (this is also the default setting).

Error Messages:

NVDI will display error messages in alert boxes if this switch is activated. If not, error messages will not appear at all.

NVDI Font cache CPX

This CPX module is used for changing the cache settings for vector fonts. The following dialog box appears when the module is called:



Cache:

The slider lets you set the total size of NVDI's caches. The CPX itself takes care of the distribution of memory to the individual caches (for an explanation of the individual caches see the section about **NVDI.INF**). If you want a printer resolution of up to 720 dpi you should set the slider somewhere between 200 and 500 kb - more memory wouldn't do any harm if you have enough to spare.

The cache settings are used as soon as they are confirmed. If saved, these settings are also written into **NVDI.INF** and will thus be retrieved when NVDI is loaded.

FONTPATH:

You can set a path where NVDI looks for vector fonts. The search also includes the immediate subdirectories under the stated path. If vector fonts are moved to the **HIDE** folder they will not be loaded by NVDI when the system starts (and will thus save memory).

FIFPATH:

The FIFPATH defines the path for the file **NVDI.FIF** in which NVDI stores the font map. If this entry is missing, NVDI will examine the font map every time NVDI is loaded which slows booting down considerably. **NVDI.FIF** is changed by NVDI every time that fonts are swapped or added, so the file should be on a drive which can be written to as well as read.

Scan Fonts:

If you click on this button NVDI looks through the stated font paths for added or removed vector fonts. This allows the user to add or remove fonts without having to reboot the system.

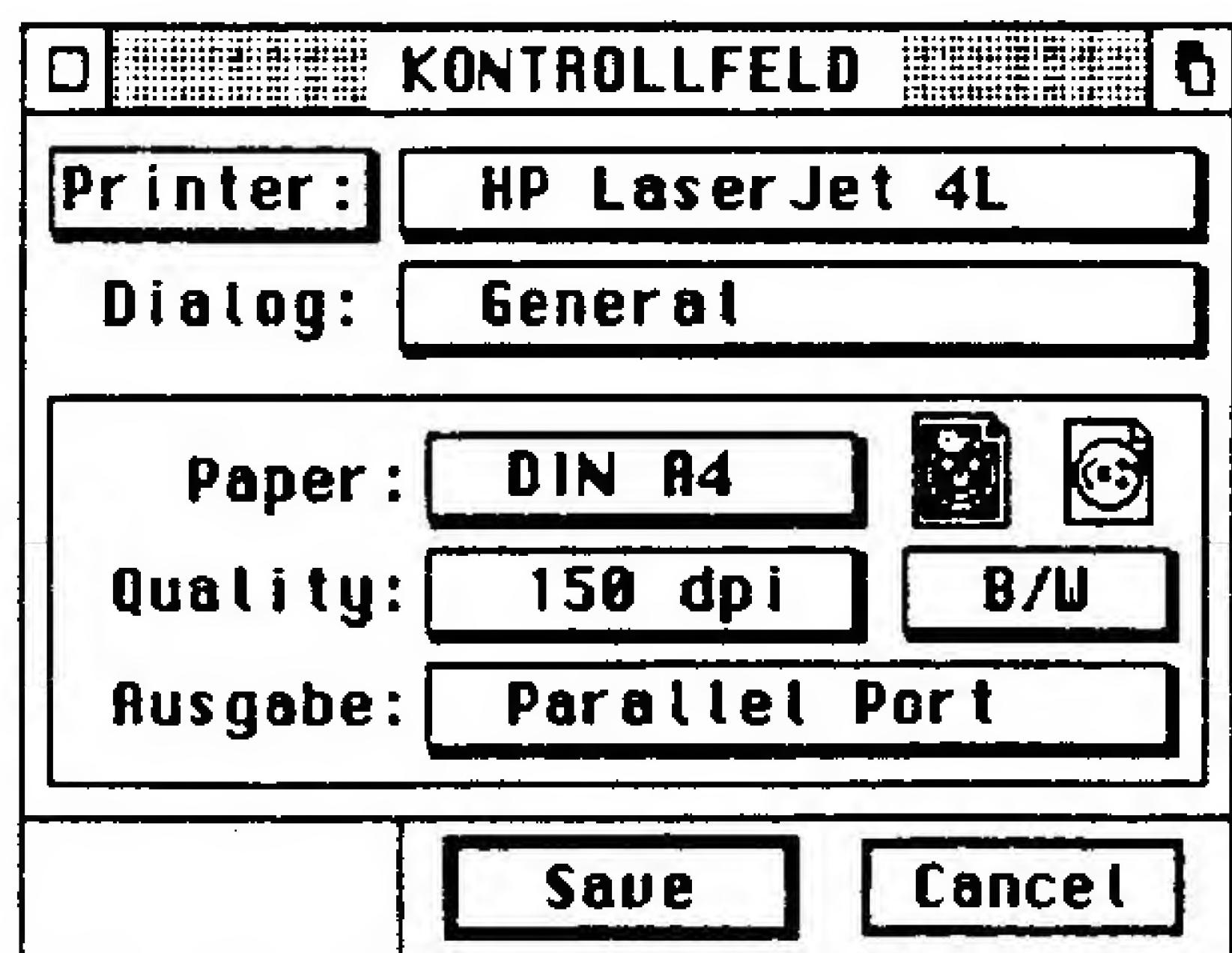
If you are running a multitasking system e.g. *MagiC!* it may be necessary to terminate one or more of the applications and restart them so that extra fonts can be recognised and loaded.

Clear Caches:

Clears/empties all vector font caches.

Printer CPX

This CPX module is used for setting the printer parameters. The following dialog box will appear:

**Printer:**

This popup shows a list of the NVDI printer drivers and IMG drivers which are registered in **ASSIGN.SYS**. Select the driver for which you want to change the settings. The default selection when the CPX is loaded is the first driver in **ASSIGN.SYS**.

Printer Family:

The popup to the right contains a list of generic printer "families". You can change the current printer family by selecting from the list. You can then switch between general settings and other options for the chosen printer using the dialog popup.

The General side of the dialog lets you set the following:

Paper:

A choice of different paper formats, portrait or landscape.

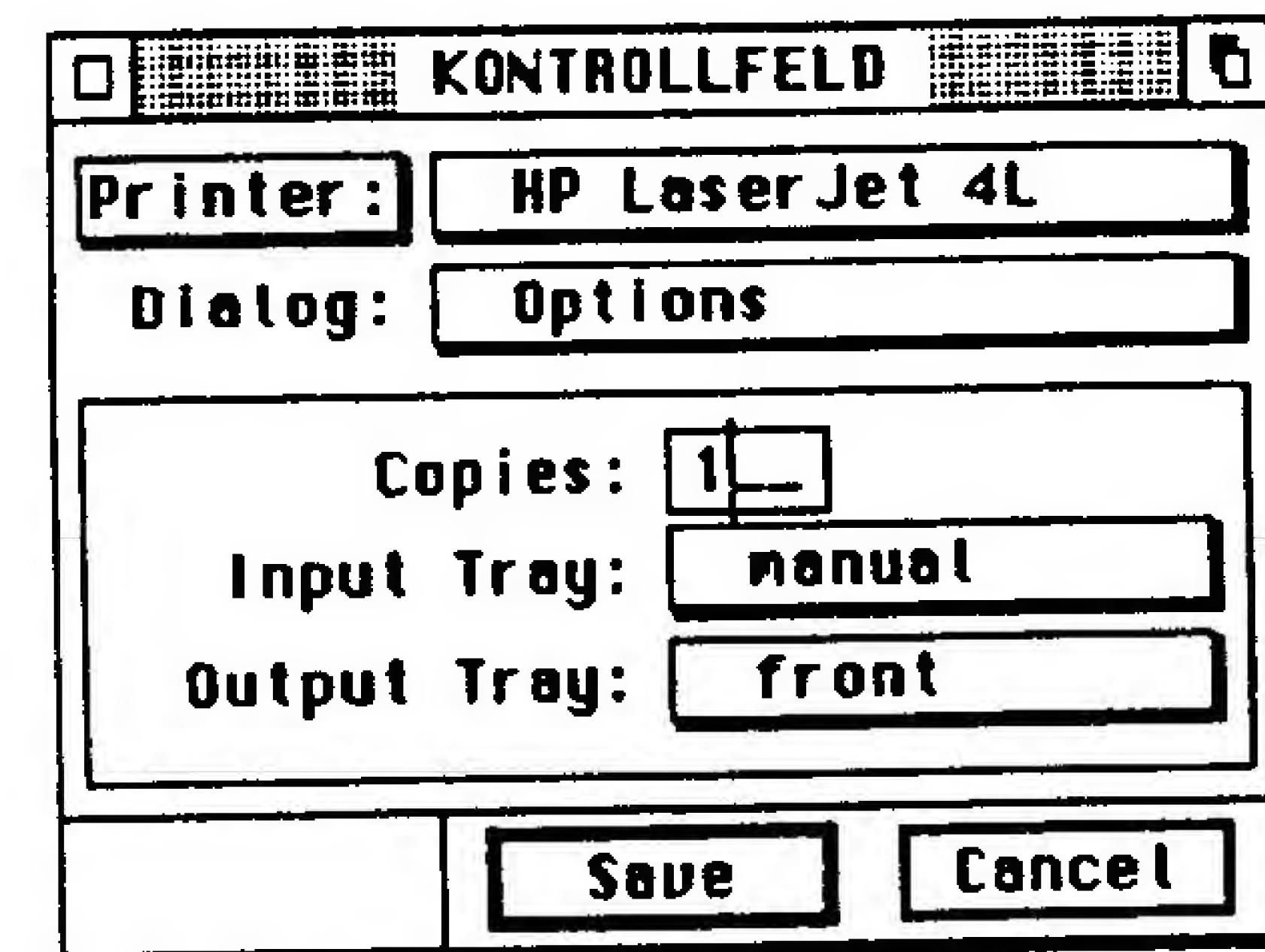
Quality:

This popup lets you choose the quality and output method of the copy. If you use a colour printer you can also set whether the copy should be in colour or only black and white.

Output:

This is used for setting where the output will be directed to (serial or parallel port, file). Whenever you print to a file you will be prompted for a file name using the file selector.

The Options side of the dialog contains the following:

**Copies:**

You can set multiple copies here i.e. each page can be printed several times.

Input Tray:

This popup is used for selecting the tray from which paper will be drawn.

Output Tray:

This popup is used for selecting the tray to which paper will be thrown.

Save:

The settings will be saved to the chosen driver. Cancel exits the dialog without using any changes you have made.

As well as the CPX modules already mentioned above you will find three more modules on the NVDI disk - **SI** (system information) **KEYBOARD** and **MOUSE**. These are conceived as substitutes for Atari's **GENERAL.CPX** especially for the Falcon. **GENERAL.CPX** doesn't allow switching the blitter or the CPU cache and also displays wrong values about the system when a virtual memory manager is running. These CPX modules also work on any ST/TT.

Using Vector Fonts

Further vector fonts are registered by simply copying the files into the folder (see FONT-PATH above and the Fontcache CPX). All fonts in this folder or in the immediate sub-directories will be usable the next time the system is started. It is a good idea to create a folder for each vector font family within the main folder if you are using a lot of fonts. If you want to remove fonts you can either delete the appropriate files or move them into the HIDE folder.

ASSIGN.SYS

The file ASSIGN.SYS contains a list of VDI drivers which are registered with the operating system (screen, printer etc.). If you don't feel comfortable modifying this file with an ASCII editor you can use the program ASSIGN (from the NVDI disk) instead. ASSIGN was written by Dirk Sabiawsky (co-author of the graphics program PAPILLON) and simplifies the association of bitmap fonts to their corresponding device drivers.

```
;;
; Example ASSIGN.SYS für NVDI
; This file must be in the root directory of the boot drive!
;
PATH = C:\GEMSYS\ ;Path
```

```
01p SCREEN.SYS ;current resolution
02p SCREEN.SYS ;ST low (320*200)
03p SCREEN.SYS ;ST medium (640*200)
04p SCREEN.SYS ;ST high (640*400)
s MONACO08.FNT ;Monaco 8 point (system font)
s MONACO09.FNT ;Monaco 9 point (system font)
s MONACO10.FNT ;Monaco 10 point (system font)
s MONACO20.FNT ;Monaco 20 point (system font)

05p SCREEN.SYS ;generic Falcon resolution
s MONACO08.FNT ;Monaco 8 point (system font)
s MONACO09.FNT ;Monaco 9 point (system font)
s MONACO10.FNT ;Monaco 10 point (system font)
s MONACO20.FNT ;Monaco 20 point (system font)

06p SCREEN.SYS ;medium TT resolution (640*480)
s MONACO08.FNT ;Monaco 8 point (system font)
s MONACO09.FNT ;Monaco 9 point (system font)
s MONACO10.FNT ;Monaco 10 point (system font)
s MONACO20.FNT ;Monaco 20 point (system font)

08p SCREEN.SYS ;high TT resolution (1280*960)
09p SCREEN.SYS ;low TT resolution (320*480)
```

ASSIGN.SYS

```
21 PAGEPRN.SYS ;NVDI driver for page printer
31 META.SYS ;metafile driver
61 MEMORY.SYS ;memory driver
91 IMG.SYS ;driver for creating IMG files
```

In ASSIGN.SYS, everything to the right of a semicolon is interpreted as comments. Comments are ignored when the file is loaded but can improve understanding of the individual lines in the file. ASSIGN.SYS is interpreted "case insensitive" by NVDI i.e. you can use capitals or lower case letters freely as long as the syntax is correct.

The optional variable "PATH =" is used for setting a folder where all bitmap fonts and device drivers used by GEM applications are searched for. Although this entry is not absolutely necessary it is recommended because you would otherwise have to place the drivers/fonts in the root directory of the boot drive which can become very messy. "PATH=" can only be set from within the file ASSIGN.SYS and cannot be changed after the system has started.

The next lines are a list of device drivers and the bitmap fonts to be used for each driver.

The two digit numbers in front of the file names are the so-called device codes. These define the devices to be controlled by the drivers, whereby the following ranges are predefined:

01-10 Screen drivers:	control graphic hardware
11-20 Plotter drivers:	translates graphic commands into plotter commands
21-30 Printer drivers:	process graphic data for printers
31-40 Metafile drivers:	create vector graphic files
41-50 Camera drivers	
51-60 Graphics tablet drivers	
61 plus Memory drivers:	create a monochrome image in memory
91 plus IMG drivers:	save images as IMG file

One of the following characters can follow directly to the right of device codes:

'P': Short for "permanent". The corresponding NVDI screen driver will be loaded automatically if NVDI is active, otherwise the Atari VDI will be used instead.

'R': Short for "resident". The device driver will be loaded when the system starts and will remain in memory. This option is only useful if the driver would otherwise have to be loaded from floppy disk each time it is used.

If the device code is not followed by a character the device driver will be loaded on request and will be removed from memory later.

A list of associated bitmap fonts (the extensions have to be '.FNT') follow below each device driver. As in the case of device drivers, the fonts would normally be loaded and removed from memory as required. This behaviour can, however, be modified by preceding the font file names with one of the following characters (and a space!):

'R': the Font will be loaded at system start and will remain resident in memory. Only useful for exclusive use of floppy disks (it would otherwise take too long to load and remove each time the font is used).

's': In NVDI this causes the font to be loaded as a system font (as replacement for a standard Atari one). The size and number of characters (256) in fonts loaded as system fonts have to match the system font to be replaced. Replacement of one or more system fonts is easier than manipulating the operating system hardware e.g. if you require a complete IBM-compatible font.

Note that only bitmap fonts (and not vector fonts) can be registered in ASSIGN.SYS.

TIP: Try to do without bitmap fonts if possible. Vector fonts not only save a lot of space (there are no huge bitmap fonts for printer resolutions) but also score better on flexibility. They can be scaled and rotated without any loss of quality; pair kerning is supported and real WYSIWYG is possible because of their moderate requirements. The use of bitmap fonts is only necessary in certain cases e.g. for screen display in terminals or ASCII editors. You might be able to display more text on the screen by ignoring typographically correct descenders and ascenders (as bitmap fonts do).

NVDI.INF

This file contains information concerning the vector font caches and paths. You can either edit the file "by hand" with an ASCII editor or use the NVDI font cache CPX module. The file could look something like this:

```
; ;NVDI 3.0 INF File ;
;Cache sizes [alle entries are in bytes]:
ATTRIBUT_CACHE = 32000 ;Size of the Attribute Cache
BITMAP_CACHE = 64000 ;Size of the Bitmap Cache
FILE_CACHE = 128000 ;Size of the File Cache
KERNING_CACHE = 16000 ;Size of the Kerning Cache
WIDTH_CACHE = 32000 ;Size of the Width Cache

;FIF Directory:
FIFPATH = C:\BTFONTS\

;Font Directories (singly recursive):
;Any number of font paths can be entered here
FONTPATH = C:\BTFONTS\
```

The meanings of the above variables:

ATTRIBUT_CACHE =

The Attribute Cache is used to manage the various text forms according to style, effect, skew and rotation.

Minimum size: 8 kB

Recommended: 16 - 32 kB

BITMAP_CACHE =

The actual fonts are stored in the Bitmap Cache; the value here should be chosen to suit the number and size of all the bitmap fonts you will be using. If you use a lot of large bitmap characters in your documents you shouldn't be too miserly here.

Minimum size: 16 kB

Recommended: 64 - 256 kB

FILE_CACHE =

This buffers accessed font files and should be at least as large as the largest font used.

Minimum size: 32 kB

Recommended: 64 - 256 kB

KERNING_CACHE =**WIDTH_CACHE =**

Kerning and Width caches contain data used for positioning and kerning characters.

Minimum size: 8 kB

Recommended: 16 - 64 kB

Note: All cache sizes are written as bytes in NVDI.INF.

FONTPATH =

Defines one possible path for vector fonts. The first level of subdirectories will also be searched.

Example:

Assume a folder structure C:\BTFONTS\SWISS.721\ and C:\BTFONTS\DUTCH.801\. The line FONTPATH = C:\BTFONTS\ in NVDI.INF allows NVDI to find all fonts in the SWISS.721 and DUTCH.801 folders and also any others in C:\BTFONTS\. If the folder SWISS.721 is moved into C:\BTFONTS\HARRHAR\, the fonts in SWISS.721 will not be included (as they are more than one directory level below the font path).

Feature:

If FONTPATH contains a folder called HIDE (in this example it would be C:\BTFONTS\HIDE\), the contained fonts would not be found. The HIDE folder is meant to be a "bottom drawer" for fonts which you might need later - simply move any currently unwanted fonts into this folder.

Multiple font paths can be declared for several drives (e.g. CD ROM):

Example:

```
FONTPATH = C:\BTFONTS\          ; Hard disk
FONTPATH = E:\FONTS\HUMANIST.601\ ; Hard disk
FONTPATH = K:\TTFONTS\A_C\       ; CD-ROM fonts from A_C
```

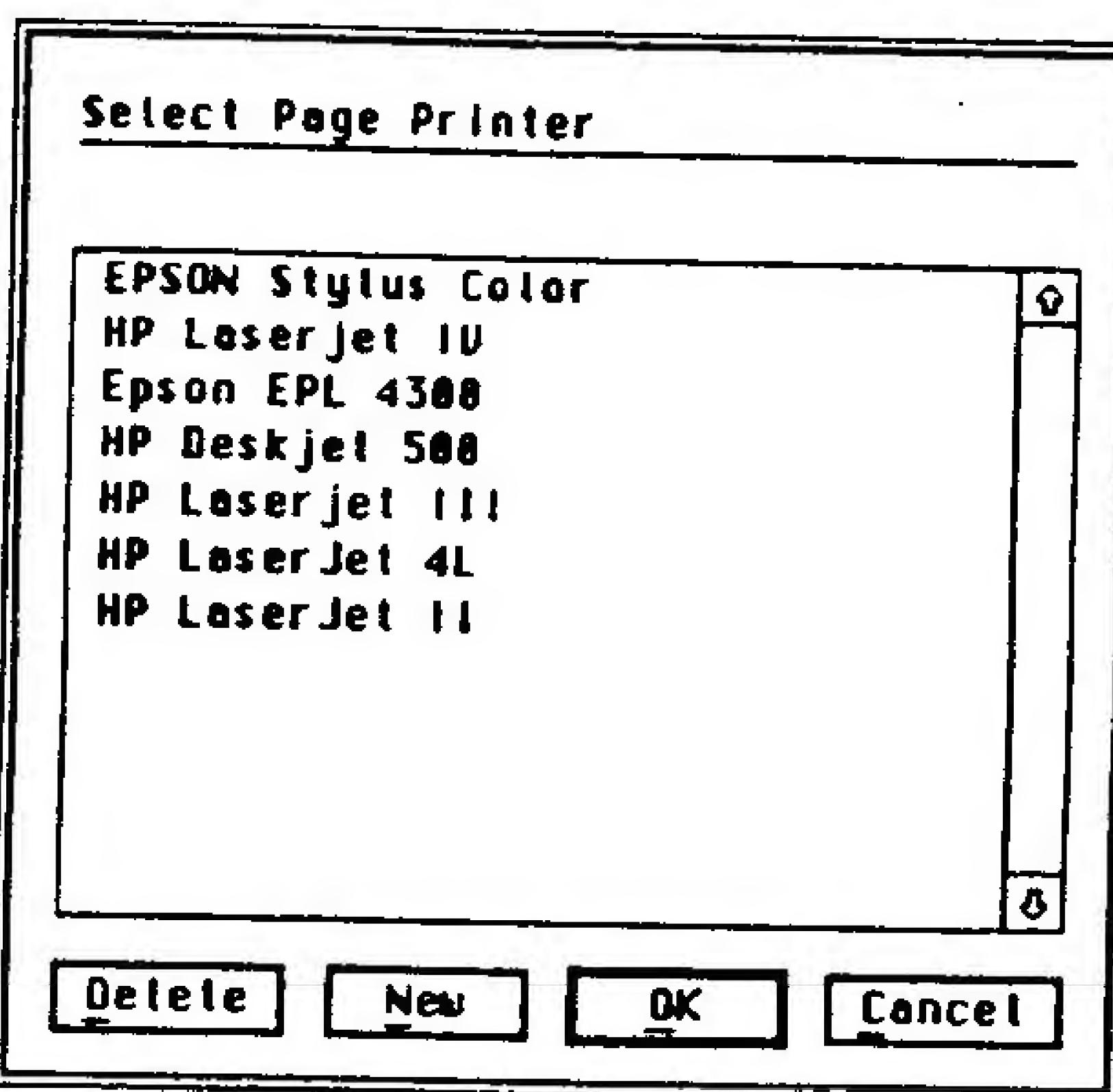
Note that very slow drives (e.g. CD ROMs) can slow down NVDI's text output if the bitmap cache is too small. You would be better off copying the necessary fonts to the hard disk or increasing the size of the NVDI bitmap cache such that drive access is minimised.

FIFPATH =

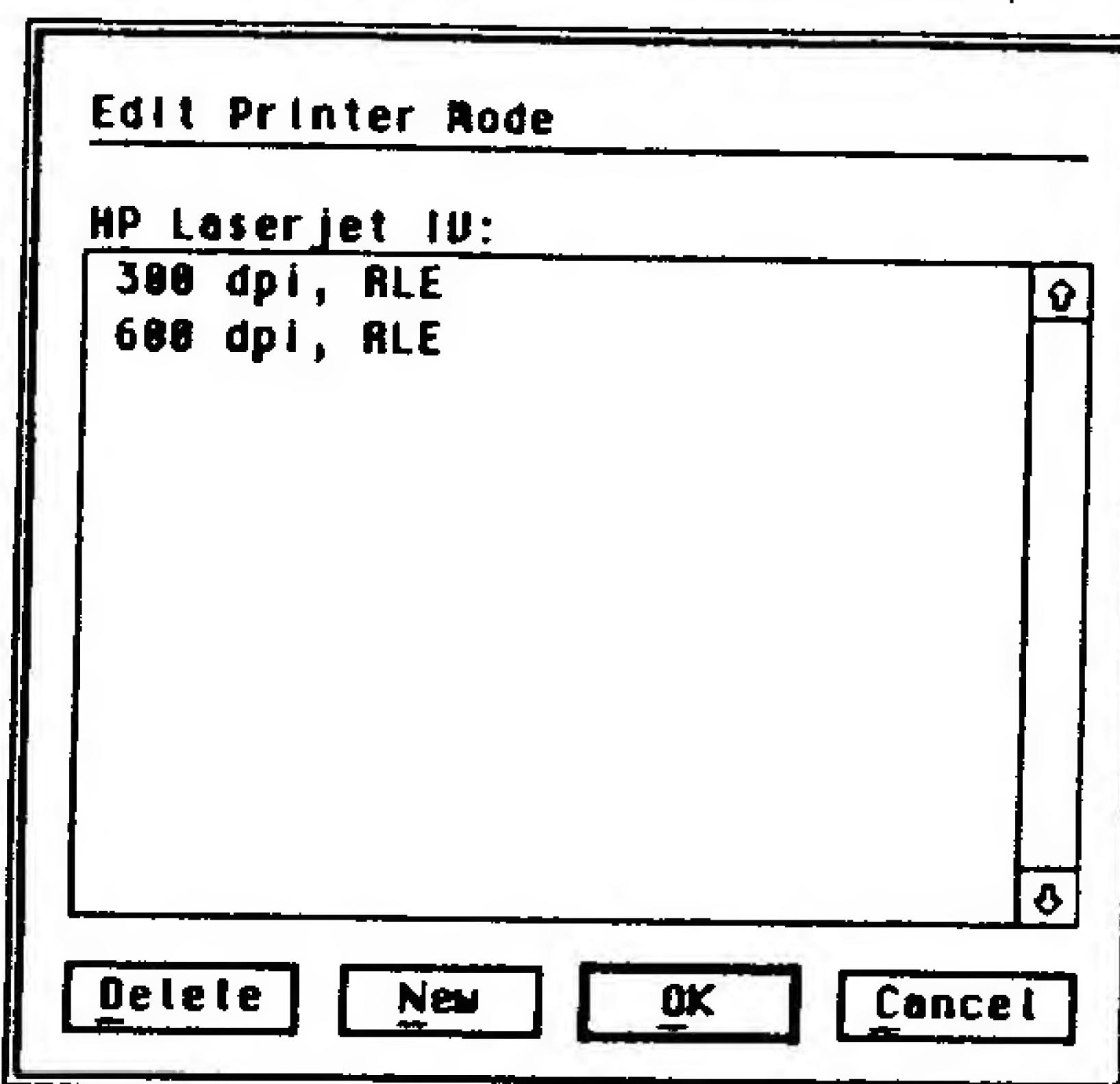
defines the optional path for the font information file (NVDI.FIF) in which NVDI registers font mapping. If FIFPATH is missing, NVDI checks the map of each font during the boot phase - this slows the boot down quite a lot. NVDI.FIF must be on a writable drive as NVDI edits the file whenever fonts are swapped or added.

Custom Printer Drivers

The program MAKEPRN.APP can be used to edit or create printer drivers. Starting this program opens the following dialog box:



Select the printer family you want to edit or enter a new one. Select Mode will then be opened.



You can either select a mode you wish to edit or add a new one. A dialog box with the name of the printer family will then be opened. Select the property of the printer driver you want to edit from the popup to the right.

Subdialog "Resolution and Margins"

HP LaserJet 10	Resolution and Margins
Resolution:	
Quality Name: 600 dpi, M6	
Horizontal Resolution:	600 dpi
Vertical Resolution:	600 dpi
Printable Width: 199.5 mm	
Printable Height: 280.3 mm	
Physical Margins:	
	Left Margin: 6.0 mm Upper Margin: 4.0 mm
	Right Margin: 4.4 mm Lower Margin: 5.0 mm
<input type="button" value="OK"/> <input type="button" value="Cancel"/>	

Quality Name:
Enter a name used to describe the mode (resolution, quality etc.) here.

Horizontal resolution, Vertical resolution:
Determines the horizontal and vertical printer resolution

Printable width, Printable height:
Determines the maximum printable area.

Left margin, Right margin, Upper margin, Lower margin:
Set the physical margins which depend solely upon the mechanics of your printer.

Subdialog "Control Characters"

Printer: LaserJet 10		Control Characters
Method:	Times with RLE (EP)	
Pages per Line:	1	
Page Start:	ESC "P\r\nC" ESC "9;000100" ESC "016000" ESC "0r04" ESC "0032"	
Page End:	FF	
Graphics On:	ESC "0020" (0) B	
Graphics Off:	ESC "P\r\nC"	
Hor. Carriage:	ESC "0b2n" (0) B	
Resolution:	600 dpi	
Vert. Carriage:	ESC "0b" (0) V	
Resolution:	600 dpi	

Method:
Determines whether graphic data is sent to the printer as lines or bit-columns (8,24 or 48 bit according to the number of pins) and which data compression method should be used.

Passes per Line: Many dot-matrix printers attain their highest quality (e.g. 360 dpi on a 24-pin matrix printer) by printing a line in several passes. The distance between the pins determines the number of passes necessary. If, in the above example, the pins are 180 dpi apart, two passes would be required.

Page Start, Page End:

Printer control sequences for the beginning and end of each page

Graphics On:

Sequence to force the printer into graphics mode. Line printers always expect the command for uncompressed graphic data.

Graphics Off

Switches graphics mode off.

Hor. Carriage:

Dot-matrix printers expect the relative horizontal carriage resolution here. Some line printers expect a command for data compression.

Vert. Carriage:

Command for relative vertical carriage resolution.

Subdialog "Paper Feed"

HP LaserJet 10	Paper Feed
Number of Copies:	ESC & ESC "D" 10
Paper Source:	<input type="checkbox"/> Recent Feed <input type="checkbox"/> Input Tray 1 <input type="checkbox"/> Input Tray 2
Paper Target:	<input type="checkbox"/> Output Tray 1 <input type="checkbox"/> Output Tray 2

Number of Copies:

If the printer itself is capable of multiple copies of a single page you should enter the corresponding control sequence here. If the control sequence is absent NVDI will repeat output to the printer the stated number of times.

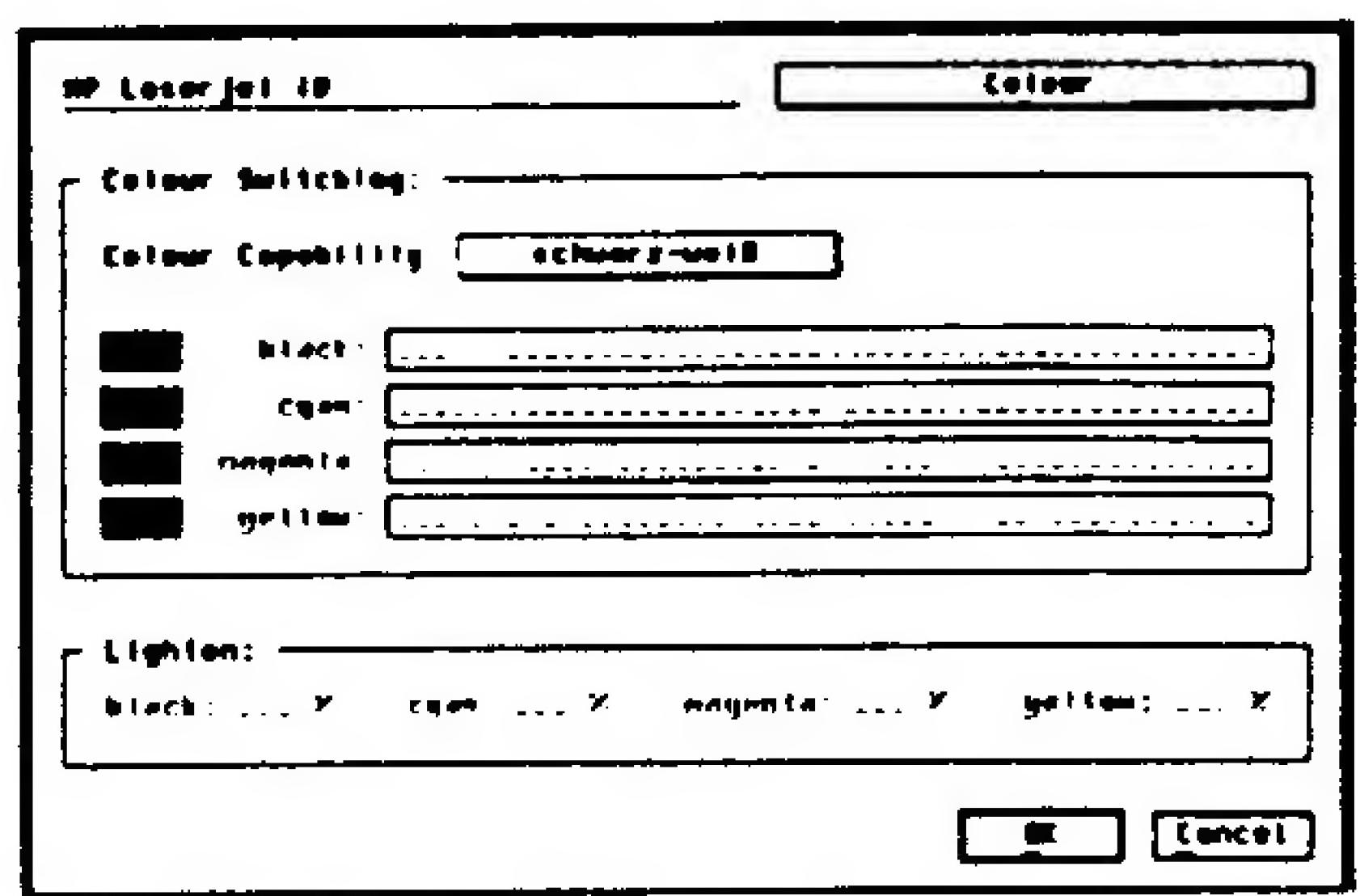
Manual Feed, Input Tray 1, Input Tray 2:

Printer commands to set where the paper should be drawn from.

Output Tray 1, Output Tray 2:

Control sequences for printers with more than one output tray.

Subdialog "Colour"



Black, Cyan, Magenta, Yellow:

If you have a colour printer you should enter the control sequences for the individual colours here.

Syntax for Control Sequences

We have oriented the syntax towards the language used by printer manufacturers to make your work as simple as possible.

- Spaces only act as delimiters. They are not sent to the printer.
- Character strings in quotes (single or double) are sent directly to the printer.
- & is the prefix for decimal numbers
- \$ is the prefix for hexadecimal numbers

The following control codes are predefined and don't have to be sent as hexadecimal or decimal numbers (the numbers in brackets are the respective ASCII codes in decimal notation):

NUL(0), BEL(7), BS(8), LF(10), FF(12), CR(13), CAN(24), ESC(27), FS(28), SP(32), DEL(127)

Variables within the control sequences can be written as follows:

- (n) or (n1) determines the position of the low byte (values up to 255) in the control sequence
- (n2) determines the position of the high byte in the control sequence
- (#) determines the position of a variable which is to be sent as ASCII ciphers (necessary e.g. for HP printers)

Configuration Tips

Interaction with other AUTO folder programs

The installation program copies NVDI into the AUTO folder without changing the (physical) order of any programs already there.

If you use other programs which trap system calls you should remember this:

NVDI should be placed after system loaders (e.g. MAGXBOOT), boot managers (e.g. XBOOT), programs which redirect standard output (e.g. REDIRECT) and virtual memory managers (VRAM, OUTSIDE) but before all other programs which hook into system vectors (e.g. resolution selector SLCT_DEV, OverScan driver etc.).

The order of AUTO folder programs can be changed very quickly and comfortably with a utility like XBOOT. Without such a program you will need to use a bit more elbow-grease:

- Create a new folder (e.g. TEMP)
- Copy all programs which are currently in the AUTO folder into the new folder and then delete the originals in the AUTO folder (owners of TOS versions \geq 1.04 can move the programs instead).
- Copy/move any existing system loader, boot manager and screen redirector from TEMP back into the AUTO folder. Then copy/move NVDI and lastly all other programs back into the AUTO folder.
- Delete the TEMP folder.

Other GDOS programs

Don't use NVDI together with SpeedoGDOS. You would only dampen the speed unnecessarily (NVDI already includes a fast GDOS and fast vector font scaler) and would endanger the integrity of your system.

VDI patches

Remove all patch programs against Atari VDI errors from the AUTO folder. NVDI doesn't need them.

Older GEM Applications

There are several old GEM applications which are only able to work with a limited number of fonts. In such a case you should create a special ASSIGN.SYS and activate it when the system starts (via a boot manager if possible) whenever you need to run such program.

First entry in ASSIGN.SYS

Some older programs only recognize a device driver when it has the first possible code for that type of device e.g. 21 for a printer driver and 31 for a metafile driver.

Frequently Asked Questions

Here are, in no particular order, the most common questions asked about the new NVDI:

?:"How do you register new vector fonts?"

A: Simply copy the fonts into the assigned vector font folder. Start the system again (reboot) or force NVDI to rescan the fonts via the NVDI font cache CPX.

?:"I don't particularly like the system fonts which came with NVDI. How do I get the original ones back onto the screen?"

A: By removing the 'S' character in front of the font names in ASSIGN.SYS with a text editor. If you don't have a text editor or don't want to use it, try the program ASSIGN which comes with NVDI.

?:"How should a bitmap font be structured so that I can also use it as a system font?"

A: GEM bitmap fonts always consist of 256 non-proportional characters and must have the same size as the Atari system font to be replaced.

?:"What can I do with ASSIGN.SYS?"

A: ASSIGN.SYS contains a list of device drivers and bitmap fonts which are managed by NVDI. More on this subject in the chapter "ASSIGN.SYS".

?:"What are the files in the GEMSYS folder for?"

A: You would normally copy device drivers and fonts into the GEMSYS folder. The reason for all this is to keep some sort of order i.e. to keep the boot directory clean. More information on this subject is to be found in the chapter "ASSIGN.SYS".

?:"Why can't I load SIGNUM! fonts using ASSIGN.SYS?"

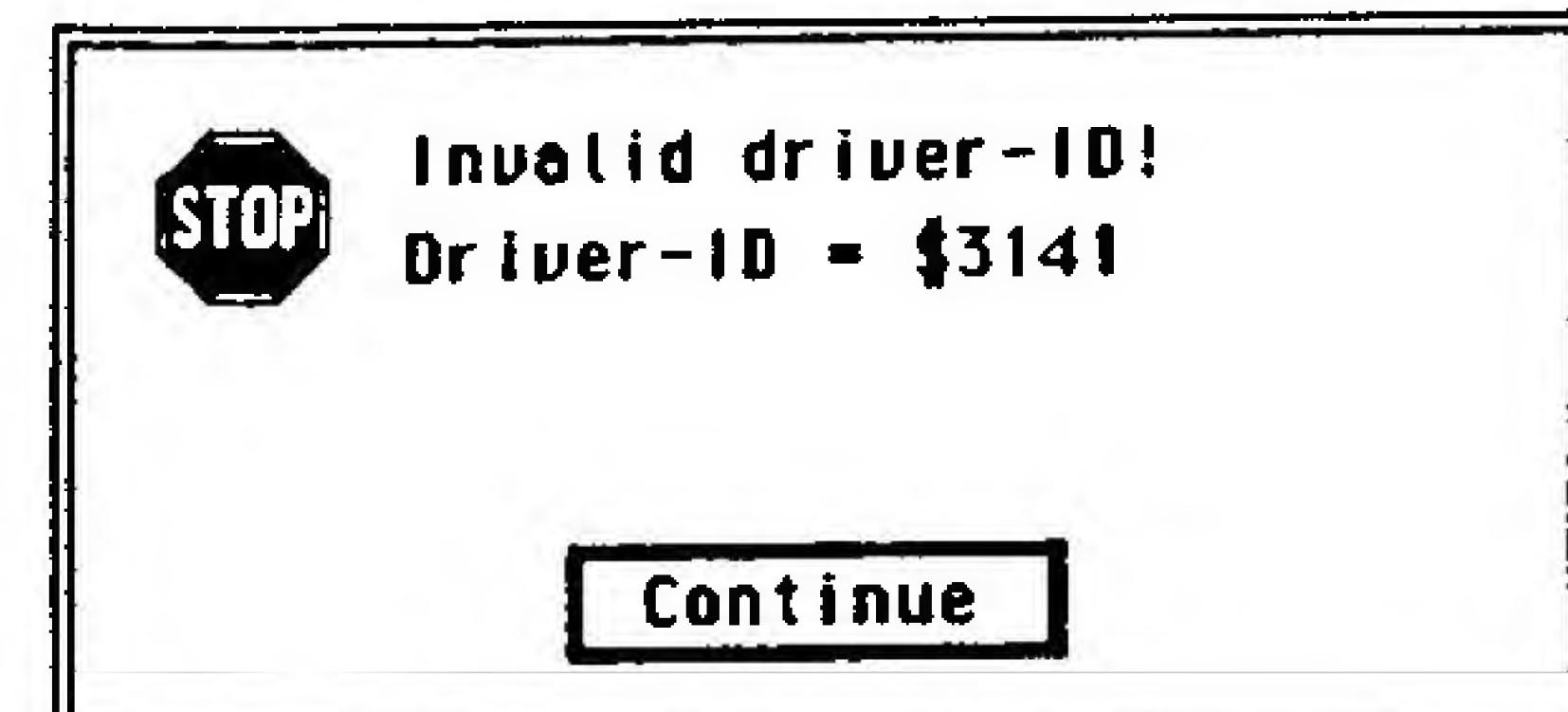
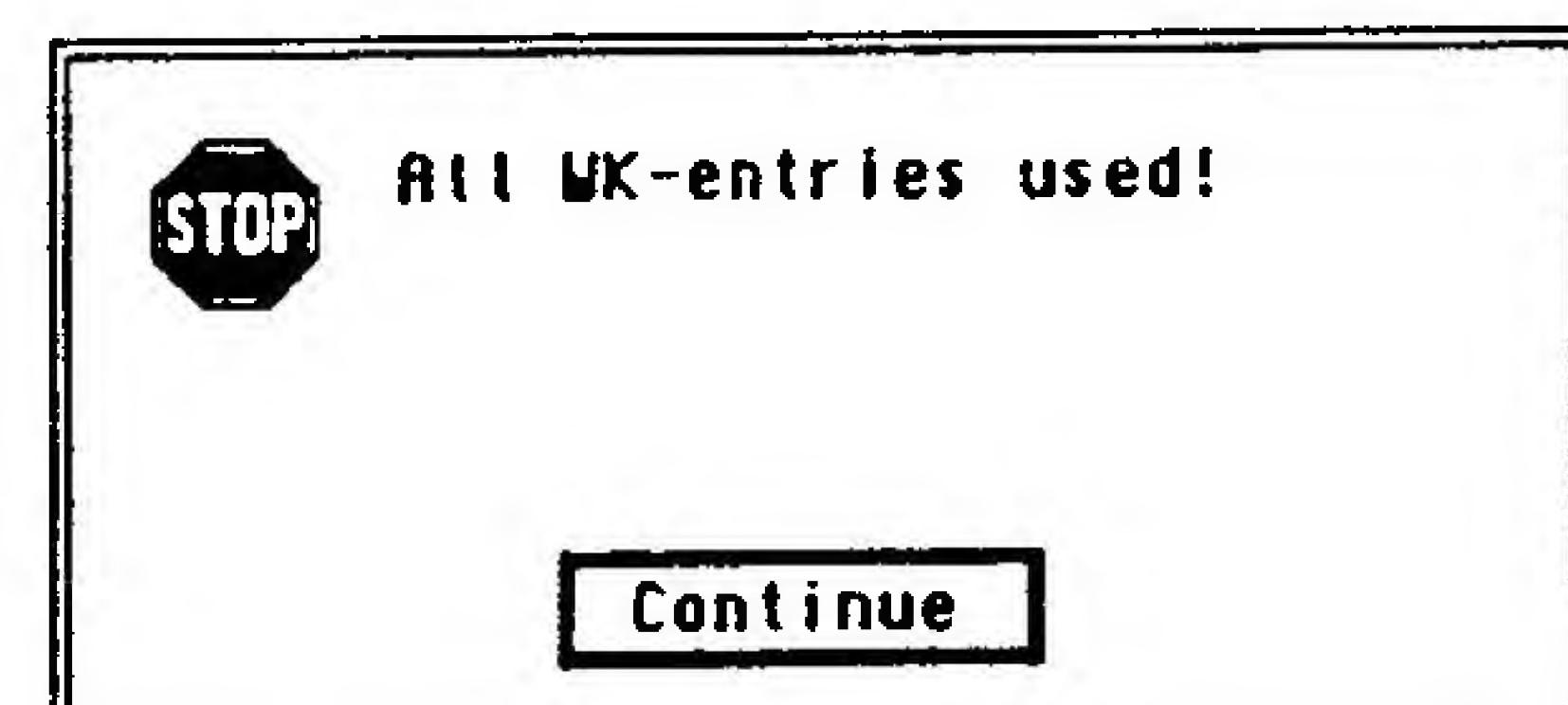
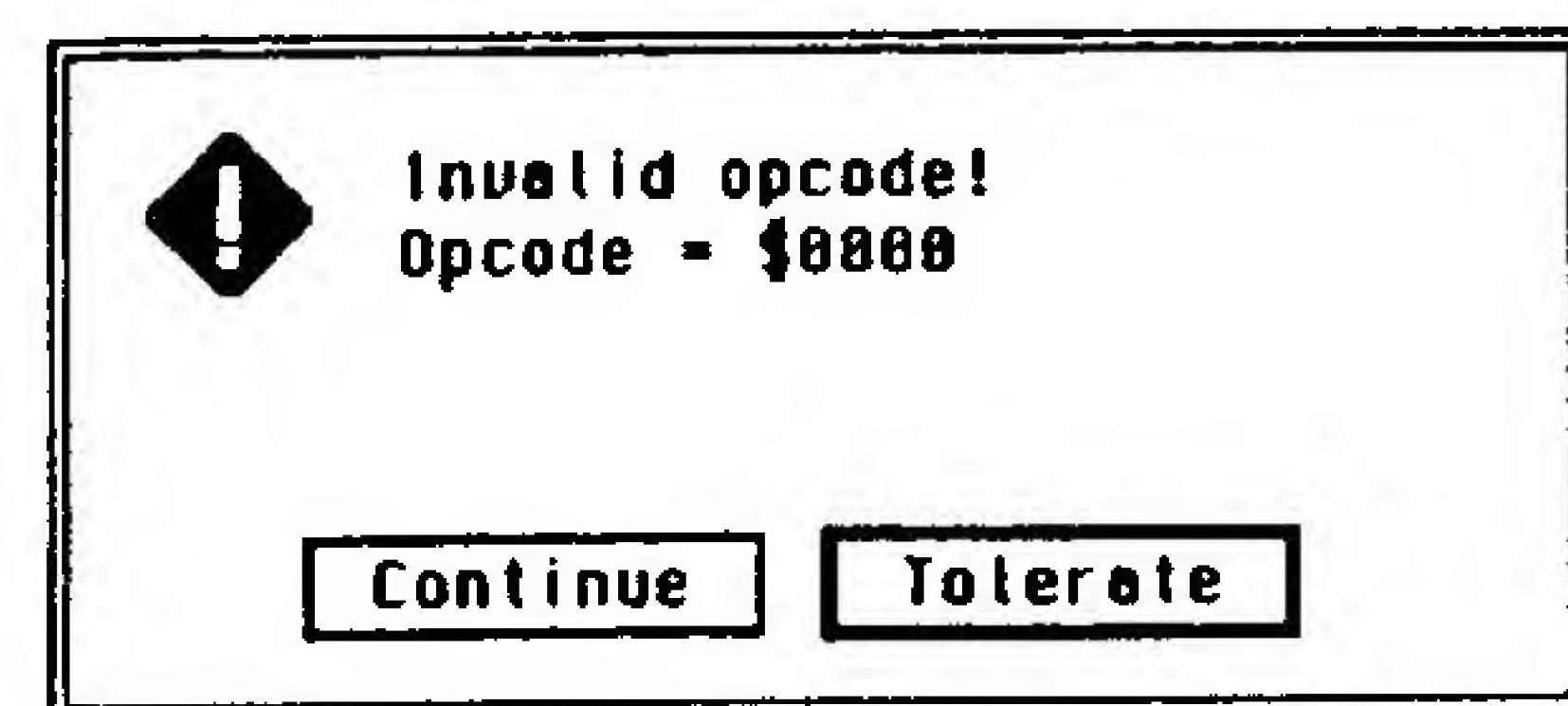
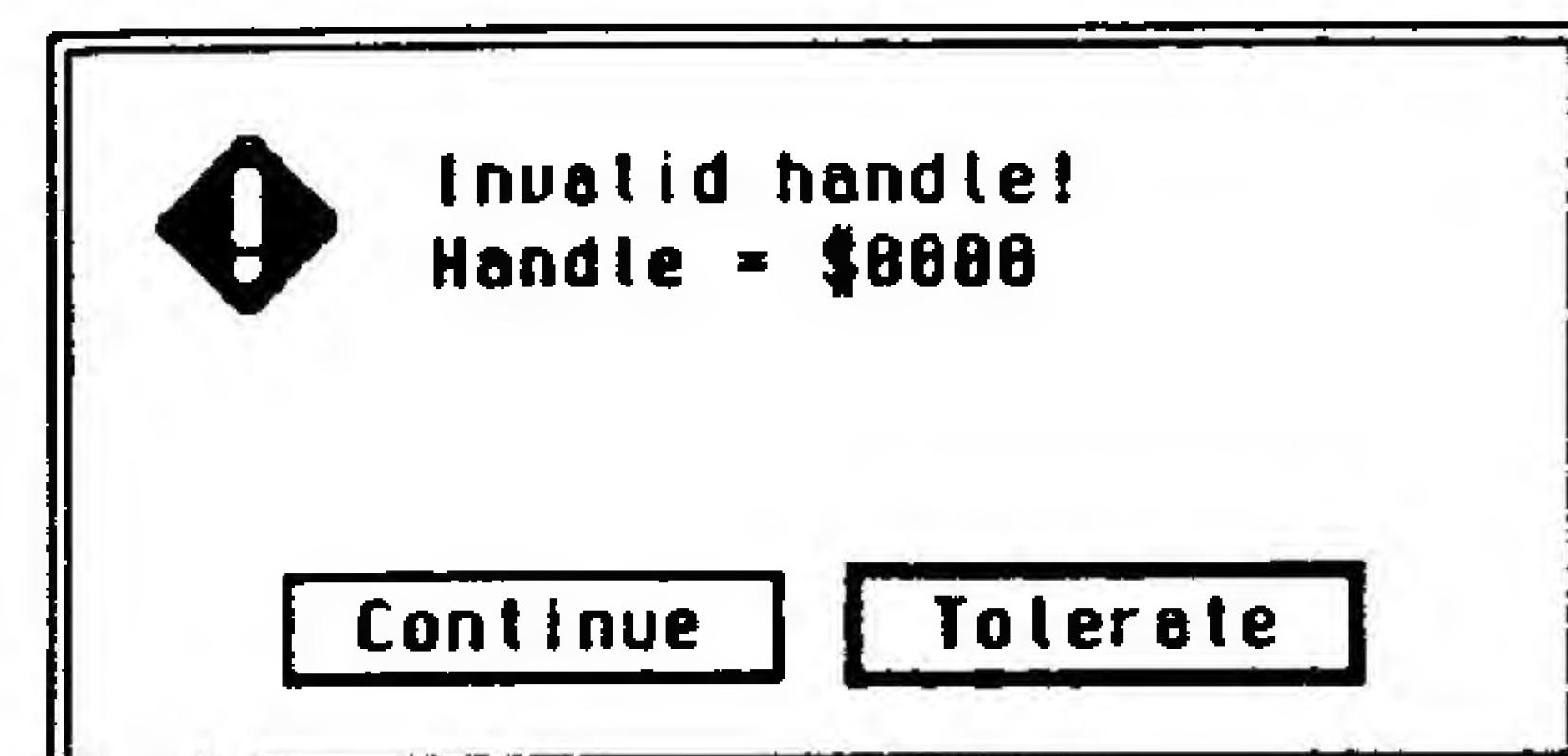
A: SIGNUM! fonts don't conform to GEM format. They can only be used here after having been converted (several programs are capable of doing this).

?:"I can't register loadable system fonts on my Falcon. What am I doing wrong?"

A: Atari has implemented new resolutions on the Falcon with ID code 5. Type the line '05p SCREEN.SYS' and then the system fonts you want into ASSIGN.SYS.

Error Messages

Faulty VDI calls, bad lines in ASSIGN.SYS or lack of memory can open an alert box containing one of the following:

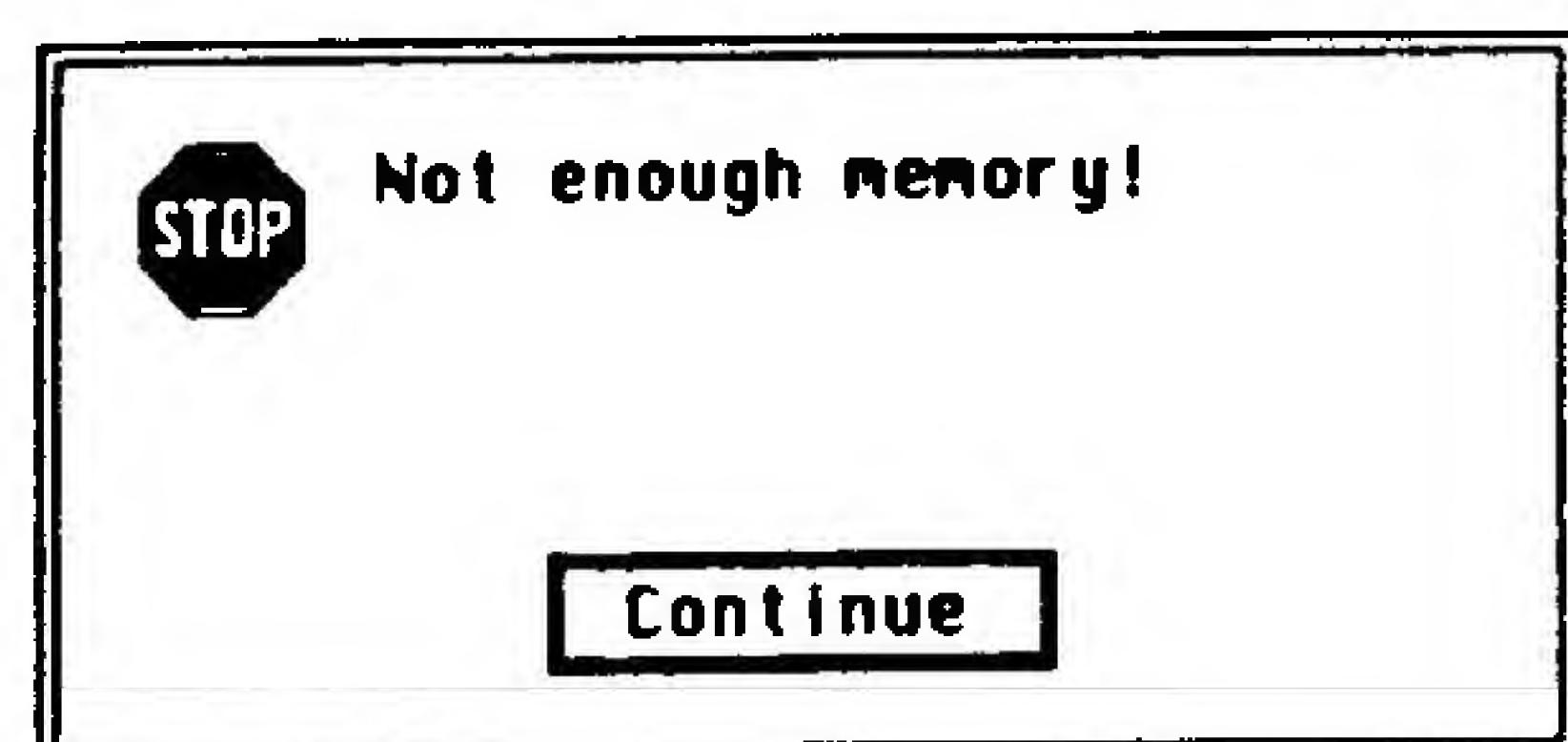


VDI has been called with a wrong handle. You can switch on error compatibility by pressing "Tolerate". The VDI call will otherwise be ignored.

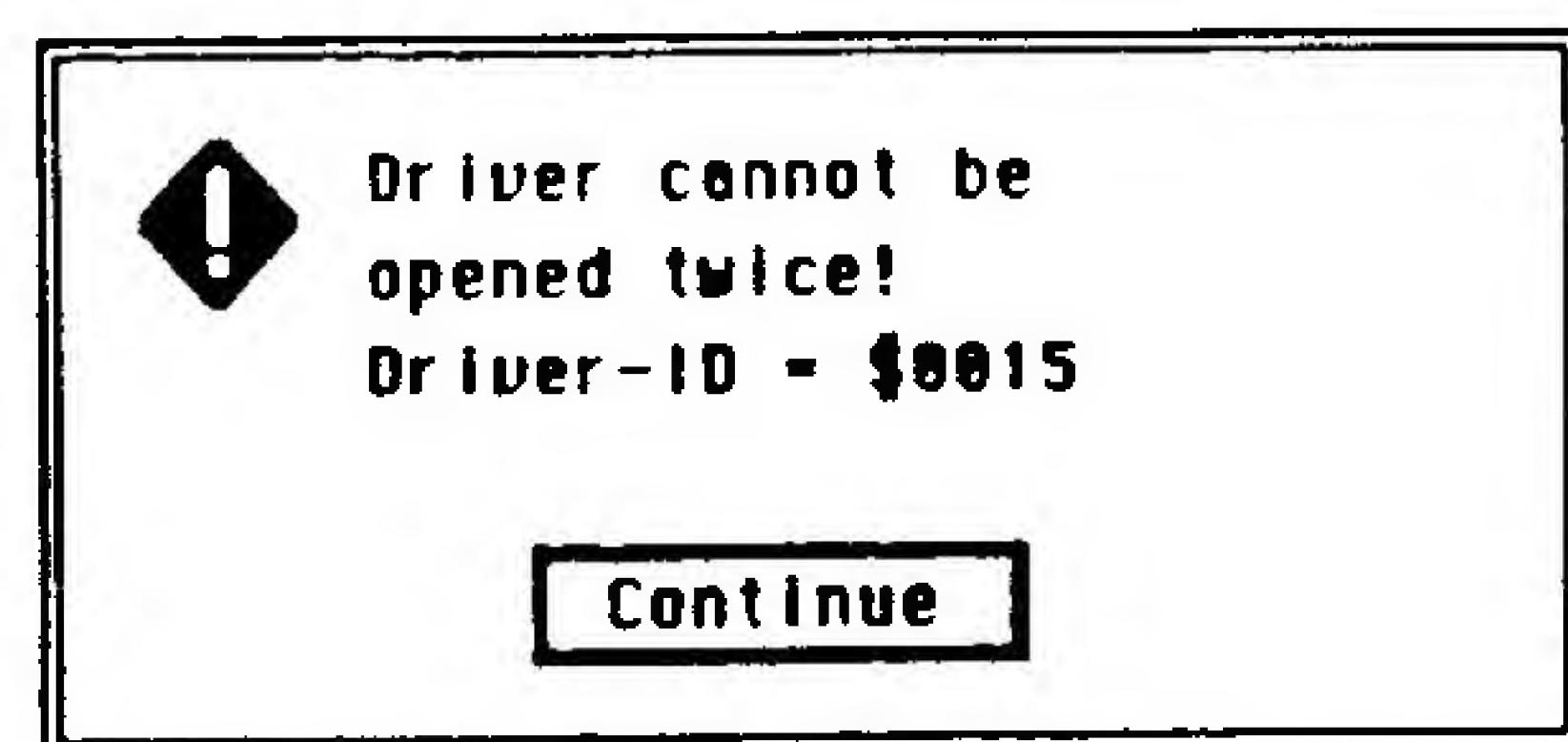
One of the NVDI device drivers has been called with a nonexistent function number. You can switch on error-compatibility by pressing "Tolerate".

128 workstations are already open. Possibly due to starting a program several times which doesn't call v_clswk().

An invalid device ID (above 99) has been sent via the function v_opnwk() to work_in[0].

Error Messages

Not enough memory available to open another workstation.



A program has attempted to open a currently active device driver again via v_opnw()

Finding Errors**Finding Errors**

Cleanly written GEM applications will run with the standard NVDI configuration:

- GDOS, GEMDOS text output, mouse-speeder and Line-A on
- Error compatibility off

The following could explain some problems which certain programs have with NVDI:

- 1.) One of your accessories or AUTO folder programs (i.e. resident) tries to access an undocumented internal VDI variable, attempts illegal modification of a Line-A variable or illegally hook into system vectors. You can track down the programs causing the problem by activating and deactivating resident programs until the problem disappears.
- 2.) The application doesn't work together with GDOS. You can test this by deactivating GDOS using NVDICONF. If the application then runs fine you should report the error to the manufacturer.
- 3.) The application doesn't get on well with NVDI's extended capabilities (efficient text scaling, 4th system font...). If the application doesn't cause any problems after you have switched on error compatibility you should report the error to the manufacturer.
- 4.) The application uses Line-A functions. You should switch Line-A off using NVDICONF.

If these steps don't solve the problem contact your NVDI distributor (please state your NVDI registration number).

1. *Leucosia* *leucostoma* *leucostoma*
2. *Leucosia* *leucostoma* *leucostoma*
3. *Leucosia* *leucostoma* *leucostoma*
4. *Leucosia* *leucostoma* *leucostoma*
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10. *Leucosia* *leucostoma* *leucostoma*
11. *Leucosia* *leucostoma* *leucostoma*
12. *Leucosia* *leucostoma* *leucostoma*
13. *Leucosia* *leucostoma* *leucostoma*
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15. *Leucosia* *leucostoma* *leucostoma*
16. *Leucosia* *leucostoma* *leucostoma*
17. *Leucosia* *leucostoma* *leucostoma*
18. *Leucosia* *leucostoma* *leucostoma*
19. *Leucosia* *leucostoma* *leucostoma*
20. *Leucosia* *leucostoma* *leucostoma*

This high-contrast, black-and-white image depicts a surface characterized by a dense, organic texture. The upper portion of the image is lighter, featuring a pattern of small, dark, irregular spots and faint, winding streaks that suggest a natural, perhaps biological or mineralogical, origin. As the image descends, the overall tone becomes darker and more monochromatic. The lower half is dominated by deep black shadows, with occasional bright highlights that reveal the intricate, undulating forms of the underlying material. The overall effect is one of a close-up, low-light photograph of a rough, natural surface.